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Cancelled claims 1-19

20. (currently amended) A method for performing interferometric inspection, comprising:

directing an illumination beam through an interferometric microscope to a semiconductor wafer, the illumination beam being split into a test beam and a reference beam in the interferometric microscope; ~~and~~

combining the reference beam reflected from a reference mirror and the test beam reflected from the wafer to generate an interference image having spatial fringes on a time delay integration mode sensor, wherein the reference mirror is adjustably tilted so as to maintain a constant optical path difference between the test beam and the reference beam for a selected portion of the interference image pertaining to a corresponding portion of the wafer.

21. (original) The method for performing interferometric inspection as recited in claim 20, further comprising moving a stage supporting the wafer and synchronizing the movement of the stage with the movement of the interference image on the sensor.

22. (original) The method for performing interferometric inspection as recited in claim 21, wherein synchronizing the movement of the stage with the movement of the interference image comprises controlling the movement of the interference image relative to the sensor by adjusting the movement of the reference mirror in the direction of the axis of the reference beam incident upon the reference mirror.

23. (original) The method for performing interferometric inspection as recited in claim 22, wherein the movement of the reference mirror is adjusted to maintain, as the wafer is moved by the stage, a constant optical path difference between the test beam and the reference beam for a selected portion of the interference image pertaining to a corresponding portion of the wafer.

24. (original) The method for performing interferometric inspection as recited in claim 20, further comprising moving a stage supporting the wafer to induce movement of the interference image relative to the sensor, wherein the spatial fringes are oriented on the sensor so that the spatial fringe lines are aligned in the direction of the induced movement.

25. (original) The method for performing interferometric inspection as recited in claim 20, wherein the image sensor is configured in a time domain integrated mode for both phase based and intensity based measurement.

26. (currently amended) An interferometric inspection apparatus comprising:

an illumination module configured to generate a first illumination beam for interferometric inspection ;

an interferometric microscope configured to split the illumination beam into a test beam and a reference beam respectively directed to and reflected from a wafer and a reference mirror and to combine the test and reference beams into an interference image having spatial fringe patterns; ~~and~~

at least one time delay integration mode sensor configured to receive the interference image; ;

a movable stage to support the wafer and to induce movement of the interference image relative to the sensor, and

a processing module operable to induce movement with the movable stage so as to align the spatial fringes on the sensor in the direction of the induced movement.

27. (original) The interferometric inspection apparatus as recited in claim 26, further comprising a movable stage to support the wafer and wherein the apparatus is configured to control the movement of the interference image relative to the sensor by adjusting the movement of the reference mirror in the direction of the axis of the reference beam incident upon the reference mirror.

28. (original) The interferometric inspection apparatus as recited in claim 26, further comprising a movable stage to support the wafer and wherein the apparatus is configured to synchronize the movement of the stage with the movement of the interference image on the sensor.

29. (cancelled)

30. (currently amended) An interferometric inspection system for inspecting semiconductor wafers, the system comprising:

an interferometric microscope module configured for splitting ~~the~~ an illumination beam into a test beam directed to the semiconductor wafer and a reference beam towards a reference mirror, and combining into a combined beam the test beam reflected from the wafer and the reference beam reflected from the reference mirror, the combined beam forming an interference image, wherein the reference mirror is configured to be adjustably tilted with respect to the incident reference beam to generate fringes in the interference image having an orientation different from a dominant direction of a repeating pattern on the wafer; and

an image sensor configured to receive the interference image and to generate a signal for deriving phase information.

31. (original) The interferometric inspection system as recited in claim 30, wherein the pattern on the wafer is a repeating pattern having a dominant direction and the orientation of the fringes relative to the dominant direction is optimized.

32. (original) The interferometric inspection system as recited in claim 31, wherein the repeating pattern has two dominant directions which are orthogonal to each other and the orientation of the fringes is adjusted to about a 45 degree angle relative to one of two orthogonal directions of the repeating pattern.

33. (currently amended) A method for performing interferometric inspection comprising:

directing an illumination beam to an interferometric microscope, the illumination beam being split into a test beam and a reference beam in the interferometric microscope, the test beam being reflected from a semiconductor wafer and the reference beam reflected from a reference mirror; and

combining the reference beam reflected from a reference mirror and the test beam reflected from the wafer to generate an interference image having spatial fringes on a time delay

integration mode sensor, wherein the reference mirror is adjusted with respect to the incident reference beam to generate fringes in the interference image having an orientation different from a dominant direction of a repeating pattern on the wafer.

34. (original) The method for performing interferometric inspection as recited in claim 33, wherein the pattern on the wafer is a repeating pattern having a dominant direction and the orientation of the fringes relative to the dominant direction is optimized.

35. (original) The method for performing interferometric inspection as recited in claim 33, wherein the repeating pattern has two dominant directions which are orthogonal to each other and the orientation of the fringes is adjusted to about a 45 degree angle relative to one of two orthogonal directions of the repeating pattern.